

NEW SPECIES OF *ERIGONE*
(ARANEAE, LINYPHIIDAE)
FROM PANAMA AND THE WEST INDIES*

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In the course of my collecting activities for many years in Central America and the West Indies I have accumulated a considerable number of the small Linyphiidae assigned to the Micryphantinae or frequently given independent family status (Micryphantidae). Among those are numerous interesting genera not well known from the Neotropical Region. Recently I have been able to separate out from the collection a number of specimens which I believe to represent new species of the genus *Erigone* which is well known in North America. Descriptions of these are given in the following pages of this paper for the consideration of those who later continue the study of this genus. I feel certain that careful collecting in Central America and the West Indies will yield numerous additional species. Cuba, Haiti and the Dominican Republic should be especially productive. More careful collecting and matching of males and females is much needed. My own studies of the genus have, thus far, produced only a very small number of known females although other specimens have been under suspicion.

Grants GB-1801 and GB-5013 from the National Science Foundation have furnished financial aid for several collecting trips in Central America, the West Indies and Florida together with my continued research in the Museum of Comparative Zoology for nearly five and one half years. As I have repeatedly acknowledged in my published papers, I am deeply grateful for the help and encouragement received from members of the staff of the Museum of Comparative Zoology extending over a period of many years.

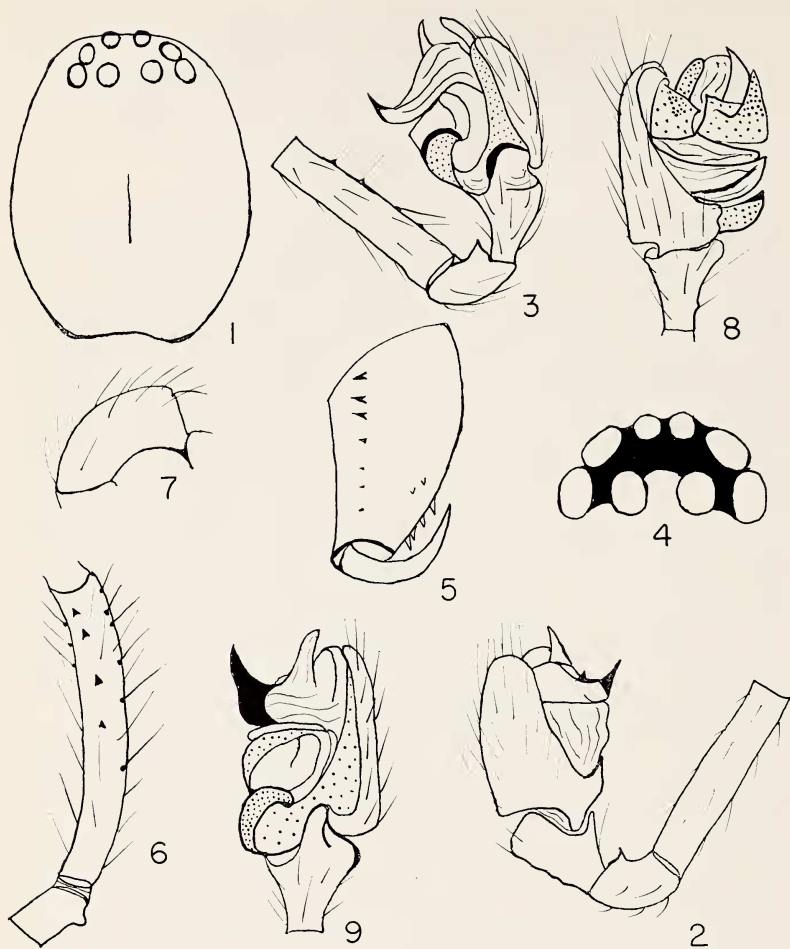
Genus *Erigone* Audouin, 1826

Erigone antegona sp. nov.

Figures 1-3

Holotype. The male holotype is from the Panama Canal Zone, Forest Preserve, January 29, 1958. The name of the species is an arbitrary combination of letters.

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Figs. 1-3. *Erigone antegona* sp. nov. Fig. 1. Carapace and eyes from above. Figs. 2-3. Left palp of holotype; prolateral and retrolateral views, respectively. Figs. 4-9. *Erigone aptuna* sp. nov. Fig. 4. Eyes from above; tipped backward slightly. Fig. 5. Right chelicera from in front. Fig. 6. Left palp femur and trochanter; nearly ventral view. Fig. 7. Right palp patella of holotype; retrolateral view. Figs. 8-9. left palpal tibia and tarsus; prolateral and retrolateral views, respectively.

Description. Total length 1.06 mm. Carapace 0.6 mm long; 0.45 mm wide opposite second coxae where it is widest; about 0.22 mm tall at beginning of very gradually declining posterior declivity opposite interval between first and second coxae; broadly rounded in front (Fig. 1); with a fairly well defined median thoracic groove; without teeth along ventral margin. Eyes: eight as usual in the genus; viewed from above, both rows moderately recurved; viewed from in front, both rows moderately procurved. Ratio of eyes AME : ALE : PME : PLE = nearly 5 : 7 : 8 : 8. AME separated from one another and from ALE by a little less than their diameter. PME separated from one another by nearly their diameter and from PLE by about their radius. Laterals separated only by a line. Central ocular quadrangle wider behind than in front in ratio of about 11 : 7; wider behind than long in ratio of about 11 : 9. Height of clypeus equal to a little more than four times the diameter of AME. Chelicerae: with three or four teeth in basal half of anterior surface (right and left sides differ somewhat); with three low and minute cusps along medial margin; fang groove well supplied with teeth but exact number not determined because of fragility of holotype and lack of paratypes. Maxillae: robust; moderately convergent; without special modifications except that there appear to be a few obscure cusps. Lip: short; less than half as long as maxillae; deeply excavated in basal half. Sternum: scutiform; widest in anterior quarter; quite convex; obtusely truncated and extended between fourth coxae which are separated by a little less than half their width. Legs: 1423 in order of length; slender spines as usual in the genus. Palp: obscurely distinctive; the trochanter has a moderately well developed ventro-lateral projection; the femur has a series of four or five small ventral cusps each with a bristle; the patellar apophysis is much reduced; the tibia appears to be quite distinctive but its parts are so intimately related to corresponding parts of the tarsus that representation in a drawing is difficult; essential parts of the tarsus represented in Figures 2-3. Abdomen: considerably smaller than cephalothorax and without special modifications; essentially typical of males of the genus. Color in alcohol: Carapace dark brown with gray streaks radiating from the middle line of the thoracic region; with a moderate amount of black pigment in ocular region; sternum dusky brown; legs and mouth parts yellowish with dusky streaks; abdomen a dark, dusky brown, nearly black.

Diagnosis. This species with its reduced palpal patellar apophysis

seems to belong in the group to which *Erigone barrowsi* Crosby and Bishop and *Erigone dentimandibulata* Keyserling belong. Its independent status as a new species is more or less clearly indicated by the body features and by the characters of the male palp.

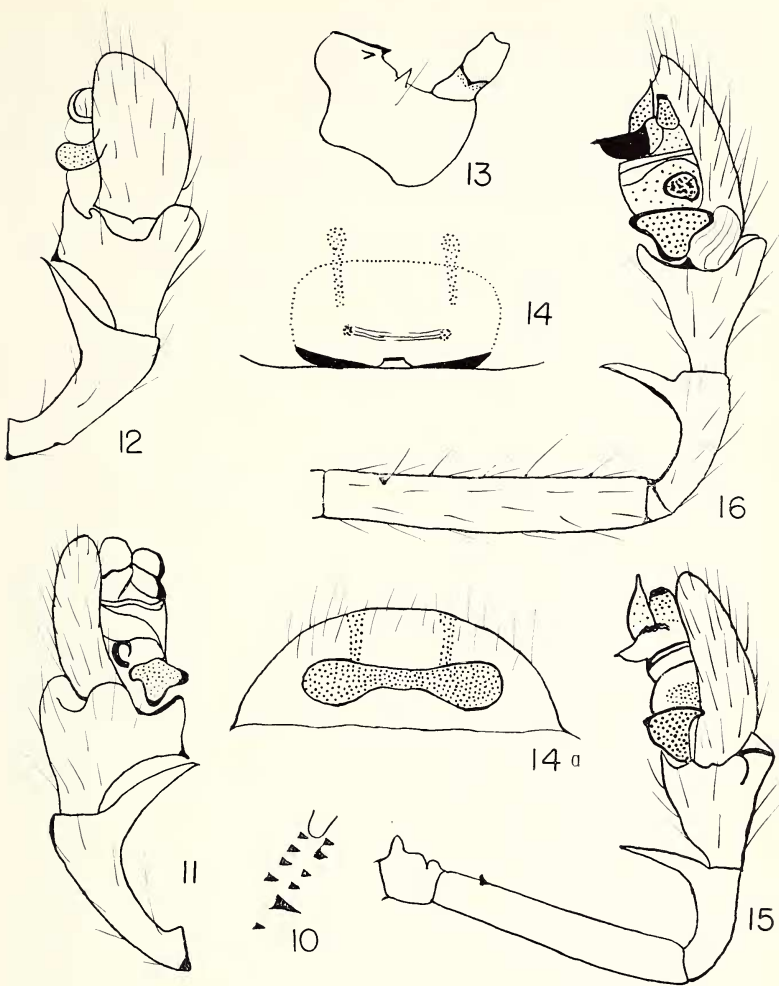
Records. The female is unknown and there are no male paratypes.

Erigone aptuna sp. nov.

Figures 4-9

Holotype. The male holotype is from the Panama Canal Zone, Barra Colorado Island, August 15, 1954. The name of the species is an arbitrary combination of letters.

Description. Total length 1.28 mm. Carapace 0.66 mm long; 0.54 mm wide; about 0.29 mm tall shortly behind PME where it is tallest; no serrations observed along ventral margin; general features typical of the genus. Eyes: eight in two rows as usual; viewed from above, anterior row definitely recurved, posterior row slightly so. Ratio of eyes AME : ALE : PME : PLE = 4 : 6.5 : 6 : 6.5 (slight irregularities noted). AME separated from one another only by a broad line and separated from ALE by a little more than their radius; separated from PME by nearly their diameter (Fig. 4). ALE and PLE contiguous to one another. PME separated from one another by about two-thirds of their diameter and from PLE by a little less than their radius. Central ocular quadrangle wider behind than in front in ratio of 7 : 4; wider behind than long in ratio of nearly 7 : 6. Clypeus somewhat extended forward; with height nearly equal to three times the diameter of AME. Chelicerae: vertical; nearly parallel; with teeth on anterior surface essentially as shown in Figure 5 but there appear to be fewer teeth on the left than on the right; with teeth along the fang groove but exact number not determined because of fragility of holotype and lack of paratypes; no lateral striations observed. Maxillae: convergent; essentially typical of the genus except that conspicuous teeth appear to be absent and with only small cusps present. Lip: short; with swollen anterior border as usual in the genus. Sternum: convex; only a little longer than wide; extended between fourth coxae which are separated by nearly their width. Legs: 1=423 in order of length; with slender spines, bristles, hairs and trichobothria. Palp: trochanter with the usual ventral protuberance; femur with inconspicuous teeth and cusps (Fig. 6); patella short and with a short, sharply pointed apophysis (Fig. 7); tibia more or less typical of males of the genus; tarsus complicated and obscurely distinctive (Figs. 8-9). Abdomen:



Figs. 10-12. *Erigone bereta* sp. nov. Fig. 10. Right cheliceral teeth along fang groove. Fig. 11. Right palp of holotype; retrolateral view. Fig. 12. Idem; dorso-prolateral view. Figs. 13-16. *Erigone autumnalis* Emerton. Fig. 13. Left maxilla of male from Panama Canal Zone. Fig. 14. Epigynum of female from Panama; seen from below. Fig. 14a. Idem; from behind with posterior border lifted. Fig. 15. Left palp of male from Trinidad, W. I.; retrolateral view. Fig. 16. Left palp of male from Puerto Rico; retrolateral view.

quite typical of males of the genus and without special modifications. Color in alcohol: carapace a very light yellowish brown with a very narrow median gray stripe and irregular radiating grayish lines; with a moderate amount of black pigment in the ocular area; sternum light grayish; legs and mouth parts yellowish with variations; abdomen a light grayish on the dorsum and lateral sides and with more gray color irregularly distributed on the venter.

Diagnosis. This species appears to be more or less closely related to *Erigone tamazunchalensis* Gertsch and Davis from Mexico but differs from that species in details of the male palp.

Records. The female is unknown and there are no male paratypes.

***Erigone bereta* sp. nov.**

Figures 10-12

Holotype. The male holotype is from Corozal, Panama Canal Zone, May 25, 1964. The name of the species is an arbitrary combination of letters.

Description. Total length 1.65 mm. Carapace 0.81 mm long; 0.58 mm wide opposite second coxae where it is widest; cephalic region considerably raised much as in *Erigone dentigera* O. P.-C.; thoracic portion very gradually slanted to posterior border; ventral margin with a series of small teeth beginning opposite first coxae; with a moderately well defined median, longitudinal, thoracic groove. Eyes: eight in two rows as usual; with chitin raised and with distortion of eyes; apparently both rows are curved essentially as described for *Erigone antegona* sp. nov. Ratio of eyes AME : ALE : PME : PLE = nearly 7 : 10 : 9 : 8. AME separated from one another by slightly less than their diameter; separated from ALE by slightly more than their diameter. PME separated from one another by about seven-ninths of their diameter and from PLE by about two-thirds of their diameter. Laterals as usual, separated only by a line. Central ocular quadrangle wider behind than in front in ratio of about 4 : 3; wider behind than long in ratio of about 6 : 5. Height of clypeus nearly equal to four times the diameter of AME. Chelicerae: well extended to expose fang, fang groove and teeth; fang somewhat irregularly curved; fang groove with six promarginal teeth of which the fifth is the largest and four retromarginal teeth, all small (Fig. 10); front surface of each chelicera with five teeth along the lateral margin with the first very small and others much larger and hooked; apparently each chelicera also has two or

more very minute cusps each with a bristle and irregularly distributed; the only striations observed are on the front surface and those are irregular and probably not used for stridulation. Maxillae: of typical shape; each with several small cusps four of which are grouped closely together with the others more widely distributed. Lip: short as usual; with basal half excavated. Sternum: of usual form; only very moderately convex; extended between bases of fourth coxae which are separated by slightly less than their width. Legs: 1=423 in order of length; patellae three and four each with a very slender dorsal distal spine; tibiae three and four each with a single slender, dorsal spine near proximal end; true spines not observed elsewhere. Palp: essential features of patella, tibia and tarsus shown in Figures 11-12; the patellar apophysis is extremely well developed; the tibia is quite distinctive; the femur has a series of minute cusps on its ventral surface and a weakly developed cusp at its base on the proteral surface. Abdomen: a swelling appears in the middle of the venter just anterior to the genital groove; otherwise essentially typical of males of the genus. Color in alcohol: carapace brownish with darker streaks; sternum dusky brown; mouth parts yellowish brown; legs yellowish; abdomen yellowish on dorsum but grayish laterally and ventrally.

Diagnosis. This species appears to be closely related to *Erigone autumnalis* Emerton. It differs from that species, however, in respect to the details of the palp, chelicerae and maxillae.

Records. The female is unknown and there are no male paratypes.

Erigone autumnalis Emerton

Figures 13-16

Erigone autumnalis Emerton, 1882: 58. The male and female types from Boston, Mass. and New Haven, Conn. are in the Museum of Comparative Zoology. Emerton, 1902: 151; 1930: 165; Keyserling, 1886: 171; Banks, 1895: 87; 1899: 189; 1910: 31; 1911: 447; Crosby, 1905: 314; Bryant, 1908: 36; Petrunkevitch, 1911: 232; Comstock, 1912: 373; 1940: 387; Crosby and Bishop, 1928: 19; Jones, 1936: 70; Kaston, 1938: 180; 1948: 191; Roewer, 1942: 726; Bonnet, 1956: 1757.

The group of specimens now considered to belong in Emerton's species were for some time considered to represent four new species. A thorough restudy of the entire lot has now convinced me that they must be regarded as presented here. The appearance of the terminal structures in the male palpal tarsus differs considerably depending upon the way they are viewed and the degree of expansion at the time

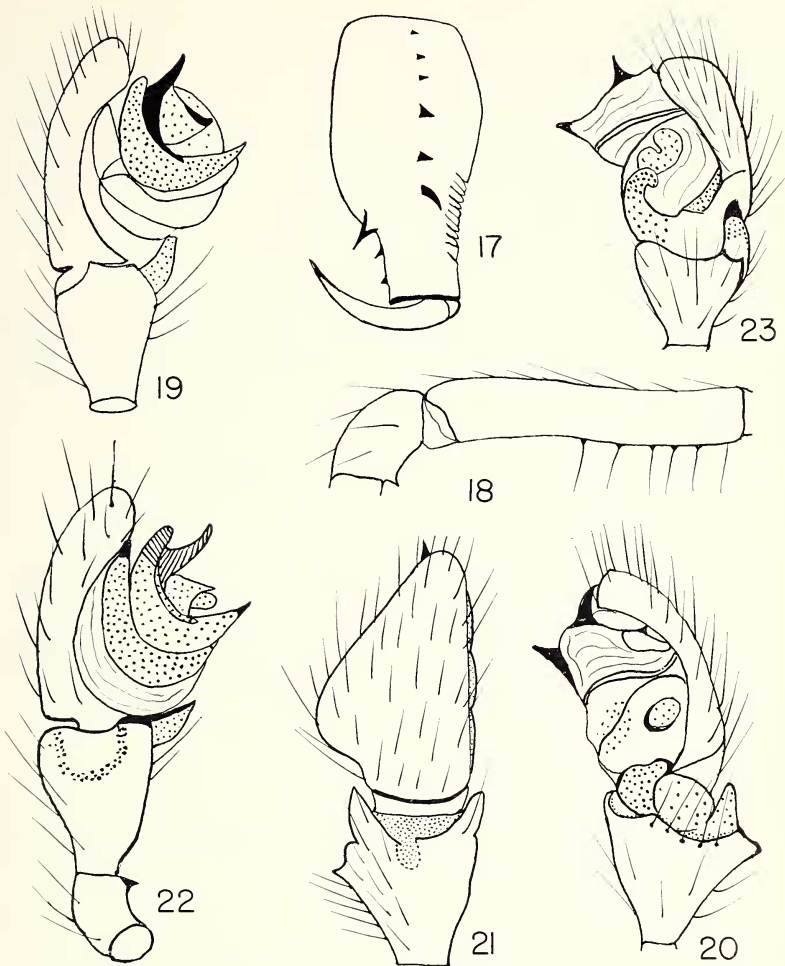
of death. I now have in my collection specimens from the mountainous regions of Panama as well as from several locations in the Panama Canal Zone. I also have a male from Trinidad, W. I. and a male from Puerto Rico, W. I. The species has previously been reported from Bermuda and Cuba. The species seems to be the most abundant of any member of the genus from the region under consideration. Drawings are offered of specimens from Panama, Trinidad, W. I. and Puerto Rico, W. I.

***Erigone digena* sp. nov.**

Figures 17-23

Holotype. The male holotype is from the Panama Canal Zone, Gatun, February 27, 1958. The name of the species is an arbitrary combination of letters.

Description. Total length 1.69 mm. Carapace 0.88 mm long; nearly 0.64 mm wide; nearly 0.4 mm tall in cephalic region where it is tallest; posterior declivity beginning opposite second coxae is somewhat steeper than in *E. antegona* sp. nov. and *E. bereta* sp. nov. Eyes: eight as usual in the genus; viewed from above, posterior row moderately recurved and anterior row more definitely so. Ratio of eyes AME : ALE : PME : PLE = nearly 5 : 6.5 : 6 : 6 (some variation noted among available paratypes); lateral eyes somewhat protuberant and PLE somewhat angular. AME separated from one another by about one third of their diameter and from ALE by about their radius. PME separated from one another by about two-thirds of their diameter and from PLE by about the same distance. Laterals contiguous to one another as usual. Height of clypeus nearly equal to eight-thirds of the diameter of AME. Central ocular quadrangle wider behind than in front in ratio of nearly 5 : 4; and about as wide behind as long. Chelicerae: essentially typical of males of the genus; teeth along lateral margin and near the fang groove essentially as shown in Figure 17. Promargin of fang groove apparently with four teeth and retromargin with three. Maxillae: with few very small cusps and each with a bristle; otherwise essentially typical of males of the genus. Lip: essentially typical of males of the genus. Sternum: moderately convex; almost as wide just behind first coxae as long; extended between fourth coxae which are separated by about two-thirds of their width. Legs: 1423 in order of length; trichobothria observed but not placed accurately. Palp: the trochanter has a ventral tooth; the femur has a series of small cusps on the ventrolateral surface; the patella has a short apophysis near the distal



Figs. 17-23. *Erigone digena* sp. nov. Fig. 17. Left chelicera of holotype from in front. Fig. 18. Left palpal femur and patella; retrolateral view. Fig. 19. Left palpal tibia and tarsus of holotype; prolateral view. Fig. 20. Idem; retrolateral view. Fig. 21. Idem; nearly dorsal view. Fig. 22. Palpal patella, tibia and tarsus of male from Jamaica, W. I.; prolateral view. Fig. 23. Palpal tibia and tarsus of male from Puerto Rico, W. I.; retrolateral view.

end; the tibia and tarsus seem to be quite distinctive (Figs. 18-23). Abdomen: typical of males of the genus; without special modifications. Color in alcohol: carapace yellowish brown with cephalic region much darker; chelicerae nearly like carapace; sternum dusky gray against a yellowish brown background; legs generally yellowish; abdomen yellowish in general with the dorsum showing a faintly indicated median longitudinal gray stripe and with faintly indicated grayish, narrow, transverse bars; the posterior end is a darker grayish with the venter a varied grayish and yellowish. The color pattern is quite variable among the paratypes available for comparison.

Diagnosis. This appears to be another species closely related to *Erigone tamazunchalensis* Gertsch and Davis from Mexico but I believe that the rather distinctive features of the palp definitely establish it as a new species.

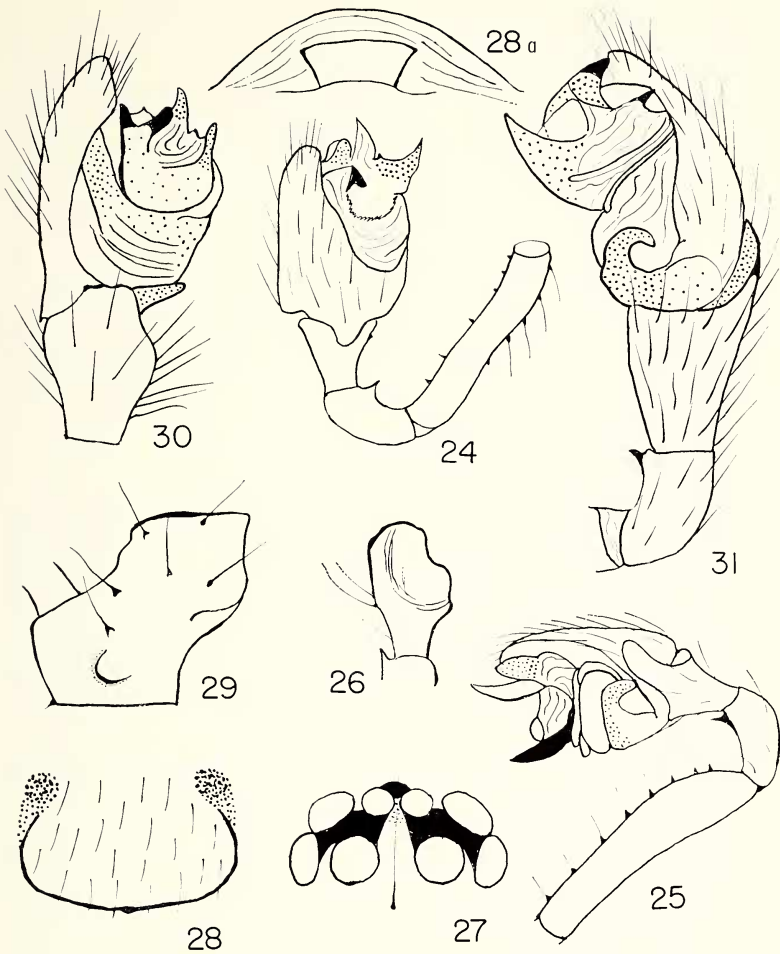
Records. In addition to the male holotype, my collection now includes ten males from the Panama Canal Zone as follows: Barro Colorado Island, August, 1950 and July-August, 1954; Summit, August, 1954; Summit Gardens, July, 1954; Pedro Miguel, January, 1958; Gatun, February, 1958. A male from Jamaica, Trelawney Parish, Glastonbury, November, 1957 and two males from the vicinity of the campus of the University of Puerto Rico at Mayaguez, January 29, 1964 are also placed here following a period during which they were regarded as representing another new species.

***Erigone dipona* sp. nov.**

Figures 24-28a

Holotype. The male holotype is from Boquete, Panama, August 4-11, 1954. The name of the species is an arbitrary combination of letters.

Description. Total length 1.17 mm. Carapace 0.6 mm long; nearly 0.49 mm wide; with cephalic region steeply raised where it is nearly 0.33 mm tall; with a moderately well defined median longitudinal thoracic groove. Eyes: eight as usual in two rows; viewed from above, posterior row gently recurved and anterior row more definitely recurved. Ratio of eyes AME : ALE : PME : PLE = 7 : 11 : 11 : 10. Outlines of eyes very obscure. AME very narrowly separated from one another, apparently by somewhat less than their radius; separated from ALE by slightly more than this distance and separated from PME by a little less than their diameter. PME separated from one another by a little less than two-thirds of their



Figs. 24-28a. *Erigone dipona* sp. nov. Fig. 24. Left palp of holotype; nearly prolateral view. Fig. 25. Idem; retrolateral view. Fig. 26. Left palpal tibia; nearly dorsal view. Fig. 27. Eyes of described female paratype; from above. Fig. 28. Epigynum of described female paratype; from below. Fig. 28a. Idem; lifted to show posterior surface. Figs. 29-31. *Erigone tepena* sp. nov. Fig. 29. Right maxilla; posterior surface. Fig. 30. Left palpal tibia and tarsus of holotype; prolateral view. Fig. 31. Left palpal patella, tibia and tarsus of holotype, retrolateral view.

diameter and from PLE by nearly their radius. ALE and PLE contiguous as usual. Height of clypeus nearly equal to three times the diameter of AME. Chelicerae: general shape typical of males of the genus; a series of teeth along near the lateral sides are, apparently, differently arranged on the right and the left; the right chelicera has a series of three teeth fairly clearly delineated in a row below the clypeal margin and probably two or three very minute cusps below those; on the left chelicera there may be three teeth but they are out of line; in place of the usually more or less conspicuous tooth near the promarginal row of teeth along the fang groove appears a group of minute cusps. Maxillae: typical of males of the genus except that teeth appear to be absent. Lip: as usual in the genus. Sternum: convex as usual; about as wide as long; extended between fourth coxae which are separated by a little less than their width. Legs: 1 = 423 in order of length; other features typical of the genus. Palp: trochanter with a small, ventral protuberance; other features essentially as shown in Figures 24-26. Abdomen: typical of males of the genus. Color in alcohol: carapace a light yellowish brown with few darker streaks and with a moderate amount of black pigment in ocular area; sternum a light grayish brown; mouth parts yellowish brown with variations; legs yellowish with some variations; abdomen a light grayish brown dorsally and quite grayish laterally and ventrally where there are several darker areas and lines especially anterior to the genital groove.

Female paratype. Total length 1.27 mm. Carapace 0.61 mm long; 0.42 mm wide; about 0.22 mm tall; not as steeply raised in cephalic region as in male holotype but posterior declivity is quite steep. Eyes: essentially as shown in Figure 27; ratio of eyes AME : ALE : PME : PLE = 3 : 5 : 5 : 4.5. ALE somewhat angular. AME barely separated from one another; separated from ALE by nearly half their radius and from PME by nearly their diameter. PME separated from one another by nearly seven-tenths of their diameter and from PLE by half their radius. ALE and PLE contiguous as usual. Height of clypeus nearly equal to four times the diameter of AME. Chelicerae: general features typical of females of the genus; fang groove probably with five teeth on each margin. Maxillae and lip: general features typical of females of the genus. Sternum: convex as in male; longer than wide in ratio of about 16 : 13; otherwise essentially as in male. Legs: 1423 in order of length but with only small difference in lengths of first and fourth. Spines on palp but no claw observed. Abdomen: typical of females

of the genus; epigynum somewhat distinctive (Figs. 28-28a). Color in alcohol: carapace, legs and mouth parts yellowish with variations; sternum light grayish; abdomen yellowish white in general but slightly grayish especially on the venter.

Diagnosis. This is another species which seems to be closely related to *Erigone tamazunchalensis* Gertsch and Davis from Mexico but the features of the male palp, chelicerae and eyes establish it as a new species.

Records. Four paratype males and nine paratype females are in the collection and all are from Boquete, Panama, August 4-11, 1954. Although there can be no certainty, the resemblance of these females to the holotype male seems to warrant their inclusion in this species.

***Erigone tepena* sp. nov.**

Figures 29-31

Holotype. The male holotype is from the vicinity of the School of Agriculture, St. Catherine Parish, Jamaica, W. I., November 23, 1957. The name of the species is an arbitrary combination of letters.

Description. Total length 2.09 mm. Carapace 0.97 mm long; about 0.77 mm wide; nearly 0.33 mm tall in cephalic region where it is tallest; with a well defined median thoracic groove; no serrations observed along ventral margin; general features quite typical of the genus. Eyes: eight in two rows as usual in the genus; seen from above, posterior row slightly recurved; anterior row quite definitely recurved; seen from in front, anterior row gently procurved and posterior row rather strongly so. Ratio of eyes AME : ALE : PME : PLE = 11 : 13 : 14 : 13. Slight differences noted between right and left sides and in contours. AME separated from one another by nearly their radius; separated from ALE by slightly less than their radius and from PME by nearly three-fourths of their diameter. PME separated from one another by nearly two-thirds of their diameter and from PLE by slightly less than that distance. Central ocular quadrangle wider behind than in front in ratio of nearly 17 : 14; slightly wider behind than long. Height of clypeus equal to a little less than three times the diameter of AME. Chelicerae: with three minute cusps followed by two small teeth of medium size all in a row in the proximal two-thirds of each chelicera near the lateral side and with a well developed tooth near the promarginal row of four or five teeth; the retromargin of the fang groove has several teeth but the exact number not determined because

of fragility of the holotype. Maxillae: essentially as represented in Figure 29. Lip: considerably wider than long; with a conspicuous distal border. Sternum: typical of males of the genus as observed in this study. Legs: $1=423$ in order of length; with few true spines but with many bristles and several trichobothria. Palp: trochanter with a rather poorly developed protuberance; femur with small cusps; other important features essentially as shown in Figures 30-31. Abdomen: typical of males of the genus. Color in alcohol: carapace very light yellowish brown; very little black pigment in ocular area; mouth parts nearly like carapace with variations; sternum very light grayish; abdomen nearly white with faint reticulations.

Diagnosis. This is another species which seems to be closely related to *Erigone tamazunchalensis* Gertsch and Davis and other species like *Erigone dipona* sp. nov. included in this study. Its status as a new species is, I believe, established on the basis of the features of the palp, chelicerae and maxillae.

Records. The female is unknown and there are no male paratypes. Two males and a female collected in the same locality and on the same day probably represent another new species. The male, intended to be the holotype of a new species, had its left palp lost because of a defective tube and the other male is dismembered. The female is in good condition but its relation to the two kinds of males is so uncertain that it has been laid aside awaiting further study.

BIBLIOGRAPHY

AUDOUIN, V.

1826. Explication sommaire des planches d'Arachnides de l'Égypte et de la Syrie. Savigny's Descr. de l'Égypte, 1(94e partie): 99-186.

BANKS, N.

1895. A list of spiders of Long Island, New York, with descriptions of new species. Jour. New York Ent. Soc., 3: 76-93.
 1899. Some Spiders from Northern Louisiana. Proc. Ent. Soc. Washington, 4: 188-195.
 1910. Catalogue of Nearctic Spiders. Smithsonian Institution. U. S. National Museum, Bull. 72: 1-80.
 1911. Some Arachnida from North Carolina. Proc. Philadelphia Acad. Nat. Sci., 43: 440-456.

BRYANT, ELIZABETH

1908. Fauna of New England. 9. List of the Araneida. Occasional Papers of the Boston Soc. Nat. Hist. 7: 1-105.
 1940. Cuban Spiders in the Museum of Comparative Zoology. Bull. Mus. Comp. Zool. 86(7): 249-532, 22 pls.

BONNET, PIERRE

1956. Bibliographia Araneorum. Toulouse. 2(2).

- CAMBRIDGE, O. P.- AND F. P.- CAMBRIDGE
1889- Arachnida-Araneida. Vols. I, II. In: *Biologia Centrali-Americana*.
1905. cana. Dulau & Co., London.
- COMSTOCK, J. H.
1940. *The Spider Book*. Revised and edited by W. J. Gertsch. Doubleday, Doran & Company, Inc., New York.
- CROSBY, C. R.
1905. A catalogue of the Erigoneae of North America, with notes and descriptions of new species. *Proc. Phila. Acad. Nat. Sci.*, 57: 301-343.
- CROSBY, C. R. AND S. C. BISHOP
1928. Revision of the spider genera *Erigone*, *Eperigone* and *Catabrithorax* (Erigoneae). *Bull. New York State Museum*, 278: 3-74.
- EMERTON, J. H.
1902. *The common spiders of the United States*. Boston. 235 pp.
1930. *Spiders of Nantucket*. Nantucket Maria Mitchell Assoc. Publ., 3(2): 161-174.
- GERTSCH, W. J. AND L. IRBY DAVIS
1937. Report on a collection of spiders from Mexico. I. *American Museum Nov.*, 961: 1-29.
- GERTSCH, W. J.
1949. *American Spiders*. Van Nostrand Co., New York.
- JONES, SARAH E.
1936. *The Araneida of Dallas County: Preliminary Note*. *Field & Laboratory*, 4(2). April, 1936.
- KASTON, B. J.
1938. Check list of the spiders of Connecticut. *Connecticut Geol. Nat. Hist. Surv.*, *Bull.* 60: 175-201.
1948. *Spiders of Connecticut*. *Connecticut Geol. Nat. Hist. Surv.*, *Bull.* 70: 1-874.
- KEYSERLING, GRAF E.
1886. *Die Spinnen Amerikas. II. Theridiidae*. Bauer & Raspe. Nürnberg.
- PETRUNKEVITCH, ALEXANDER
1911. A synonymic index-catalogue of spiders of Nort, Central, South America. etc. *Bull. Amer. Mus. Natur. Hist.*, 29: 1-809.
- ROEWER, C. FR.
1942. *Katalog der Araneae*. 1: 1-1040. Bremen.